Draft
Bay-Delta Conservation Plan
Work Plan

Prepared by

SAIC

December 12, 2006

1.0 INTRODUCTION

The Bay-Delta Conservation Plan (BDCP) is being developed to allow for projects to proceed that restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework. To support these ends, this proposed comprehensive regional conservation plan will address compliance with federal and California endangered species laws and regulations covering activities by various Potentially Regulated Entities (PREs) in the Statutory Delta. The process for planning is outlined in the BDCP Planning Agreement, dated October 6, 2006. BDCP planning goals are:

- Provide for the conservation and management of Covered Species within the Planning Area;
- Preserve, restore, and enhance aquatic, riparian and associated terrestrial natural communities and ecosystems that support Covered Species within the Planning Area through conservation partnerships;
- Allow for projects to proceed that restore and protect water supply, water quality, and ecosystem health within a stable regulatory framework;
- Provide a means to implement Covered Activities in a manner that complies with applicable State and federal fish and wildlife protection laws, including CESA and FESA, and other environmental laws, including CEQA and NEPA;
- Provide a basis for permits necessary to lawfully take Covered Species;
- Provide a comprehensive means to coordinate and standardize mitigation and compensation requirements for Covered Activities within the Planning Area;
- Provide a less costly, more efficient project review process which results in greater conservation values than project-by-project, species-by-species review; and
- Provide clear expectations and regulatory assurances regarding Covered Activities occurring within the Planning Area.

This Draft Work Plan provides the statement of work, schedule, and assumptions for tasks proposed to be conducted by Science Applications International Corporation (SAIC) to prepare the BDCP in support of the PREs, the BDCP Steering Committee, and the Fishery Agencies as defined in the Planning Agreement.

2.0 STATEMENT OF WORK

Task 1. Project Management

Subtask 1.1 Project Administration and Coordination

As prime contractor for the Bay Delta Conservation Plan (BDCP), SAIC will coordinate with the BDCP Steering Committee and Potentially Regulated Entities (PREs) Management Committee in the preparation of the BDCP through communications via meetings, telephone calls, and email to facilitate efficient conduct of tasks. The PRE Program Manager (PPM) will be the primary point of contact for SAIC and will provide direction to SAIC for all activities under the contracted Statement of Work.

SAIC will prepare a Management and Communications Memorandum to the PPM that describes the communication and management protocols for executing SAIC's project scope, schedule, and budget for BDCP preparation. SAIC project manager and deputy project manager will maintain regular communication with the PPM to determine specific direction to SAIC for work flow coordination and the content of deliverables. SAIC will work with the PPM to regularly review progress on the scope of work and status of the schedule and budget. In addition, SAIC will maintain open communication via telephone and email with the Chair of the Steering Committee and representatives of the members of the Steering Committee as necessary throughout the preparation of the BDCP.

The SAIC project manager and deputy project manager will manager and coordinate all consulting staff under the SAIC contract including subcontractors. SAIC will establish and monitor subcontract agreements, scopes of work, work flow, and work products of subcontractors and ensure completion and coordination of work under a single schedule and single list of deliverables.

Under this subtask, SAIC will coordinate with the Fisheries Agencies (California Department of Fish and Game, US Fish and Wildlife Service, and NOAA Fisheries) in the development of work products for which Fisheries Agency staff are providing data, information, and interim review.

It is anticipated that as the BDCP is developed, tasks under this Work Plan and the schedule will change as information is gathered and participating agencies provide input and comment. As such, SAIC will periodically review and update this Work Plan and schedule as necessary to meet the needs of the Steering Committee. Changes in the scope of work and schedule typically result in changes in cost.

Subtask 1.2 Project Monitoring and Status Reports

SAIC's project manager will monitor expenditures by task relative to task budgets, progress, and schedules. We will prepare project status reports with invoices on a monthly basis to document deliverables provided and accomplishments during the previous month. Invoices will describe monthly expenditures by task and include a comparison of actual to budgeted expenditures. Progress reports will include a projection of expenditures for the following

month and will document any issues arising during the reporting period that could affect the scope, budget, or schedule. If the project schedule could be affected, SAIC will provide the PPM with options for addressing such issues identified in monthly reports.

Subtask 1.3. Administrative Record

SAIC will coordinate with the PPM to maintain an appropriate administrative record of the BDCP. We will initially coordinate with the PPM and PREs to identify protocols for providing SAIC with materials to be maintained in the record and to identify the documents, emails and other communications records, and other information generated in the BDCP development process to be maintained in the administrative record.

Subtask 1.4 Meetings

The SAIC project manager or deputy project manager will attend regularly scheduled and, as needed, specially called meetings with the PPM, PREs, Steering Committee, and Fisheries Agencies. These meetings would focus on BDCP development, decision making, project progress reporting, receiving direction, and resolution of issues that could affect project scope, schedule, or budget. We propose attending up to 162 meetings. We have estimated the number of meetings based on a regular frequency of occurrence, however, it is anticipated that meetings will occur more or less frequently over the project term depending on the need for management direction. On average, meetings will be attended by three SAIC staff (the project manager, deputy project manager, and task managers as necessary).

Meetings with Steering Committee	36
Meetings with PPM	72
Meetings with PREs	36
Meetings with Fishery Agencies	18
Total Meetings	**162**

Meetings in addition to those listed in this subtask are specifically described under other tasks presented in this scope of work. Additional consultant attendees at meetings described here are included under the meeting subtask of the applicable task.

Key Staff

Lead: Paul Cylinder, Pete Rawlings

Deliverables

- Management and Communications Memorandum (1) – pdf via email
- Monthly project status reports – pdf via email with invoices
- Administrative record as identified in the protocol

Assumptions

- All meetings will be conducted in Sacramento, California

- Meetings may be attended via conference call-in phone when necessary

Task 2. Support Public Involvement and Outreach Program

Subtask 2.1 Coordinate with Public Involvement and Outreach Consultant

At the direction of the PPM, SAIC will work with the BDCP public involvement and outreach consultant to coordinate the development of informational materials (e.g., newsletters, website, pamphlets, and presentational graphics). A primary focus of this task is expected to be providing the public involvement and outreach consultant with the information necessary to develop informational materials related to the status and progress of BDCP development. SAIC will also assist in a review capacity to ensure the accuracy of informational materials developed by the public involvement and outreach consultant.

SAIC will not maintain the BDCP website, but will coordinate with the PPM to provide documents for inclusion on the website as these documents are authorized for release by the Steering Committee.

Subtask 2.2 Support Public Workshops

This task anticipates that up to eight (8) public workshops will be held by the Public Information and Outreach consultant. Up to three SAIC team members (the project manager, deputy project manager, and task managers as necessary) would attend and participate in these workshops. This participation would focus on providing technical support to the workshop facilitators.

Subtask 2.3 Meetings

Under this task, up to two SAIC team members would attend up to eight meetings with the PIO consultant to coordinate development of workshop content and presentational information.

Key Staff

Lead: Paul Cylinder, Pete Rawlings

Deliverables

None

Assumptions

- Six workshops will be held in Sacramento or within 60 miles of Sacramento and two (2) workshops will be held elsewhere in California
- Coordination meetings will be held in Sacramento
- SAIC will assist in the review of up to 15 separate draft public outreach informational pieces

Task 3. Support Science Advisory Process

Subtask 3.1 Support Development of Science Advisory Process and Panel

SAIC will support the Steering Committee in the development of the process for independent scientific advice on and review of the draft BDCP products. This support will include input on the scope of services of the independent science advisory panel (SAP), selection of a science panel facilitator, and members of the SAP. The Fishery Agencies generally require a clear separation of the consulting scientists and independent science advisors during preparation of conservation plans. SAIC will provide support to the process as appropriate to maintain the separation necessary for an independent science review.

SAIC will work with the Steering Committee to identify candidates for the SAP facilitator and will work with the Steering Committee and the SAP facilitator to identify candidates for the SAP.

SAIC will support the Steering Committee in the development of specific questions to pose to the science advisory panel that are germane to the development of the BDCP and particularly questions regarding the approach to the impact assessment and potential efficacy of conservation measures.

Subtask 3.2 Support Science Advisory Panel Workshops

Although the SAIC must allow the science advisory panel their independence from BDCP development, the panel will need support from SAIC to accomplish their tasks efficiently. Support from SAIC will include providing to the SAP specific documents or portions of documents, guidance on where to find key information within documents provided, and summaries and clarification of information

Subtask 3.3 Meetings

- Support preparation for and attend up to four (4) Science Advisory Panel workshops
- Up to six (6) meetings to develop the science advisory process and identify panel members

Key Staff

Lead: Paul Cylinder, Pete Rawlings

Deliverables

None

Assumptions

- SAIC will serve in a support role to the Steering Committee and PREs in working with the SAP and will not be responsible for any deliverables related to the SAP advice or review.

Task 4. Covered Activities

Subtask 4.1 Develop List of Covered Activities

It is expected that the PREs will put forward two types of proposed covered activities, fixed-location activities and Delta operational activities. While the fixed-location activities are likely to be relatively independent of each other, the operational activities will be interrelated. As such, these two types of activities will be addressed separately under each subtask. It should also be noted here that the types of activities to be proposed by the PREs are known only in very general terms at this point, so changes to the scope and approach may be needed once the activities are more fully known.

Fixed-Location Activities

SAIC will work with each PRE to identify the covered activities they propose for coverage under the BDCP. We recommend that we work with the PREs to develop guidelines for assessing the appropriateness of including proposed covered activities. SAIC will work with the PREs to develop these guidelines to assess proposed covered activities. SAIC will then work with each individual PRE to determine what fixed-location activities they wish to propose for inclusion in the BDCP, and will prepare a draft memorandum briefly describing each of the proposed covered activities (i.e., location, implementation schedule, purpose). The draft memorandum will include the application of the guidelines to activities and provide SAIC's assessment of results. The draft covered activities memorandum will be provided to the PREs and, as appropriate, the Steering Committee for review. Following receipt of review comments, SAIC will prepare a final memorandum listing those activities that will be proposed for coverage in the BDCP. Depending on the level of agreement that can be obtained with the PREs and, as appropriate, the Steering Committee, revisions to the guidelines and list of covered activities may need to be undertaken.

Operational Activities

At the same time SAIC is meeting with the PREs to learn about which fixed-location activities proposed for inclusion in the BDCP, we will also discuss with the PREs their expectations for ongoing and future Delta operations. SAIC will compile a list of these planned operations. We will not attempt to formulate an integrated operational plan at this point. We will prepare a memorandum listing the operational plans of each of the PREs and will present it to the PREs and, as appropriate, the Steering Committee, for comment and revision.

Subtask 4.2 Describe Covered Activities

Fixed-Location Activities

Following identification of the proposed covered activities, SAIC will work with each of the PREs to develop detailed descriptions of each covered activity. Descriptions will be based on the best available information and will be described in sufficient detail to allow impacts on covered species and natural communities resulting from such activities to be assessed. If sufficient information is not available to analyze impacts of a proposed activity, we will work with the PRE to gather more detail to supplement the description. If sufficient detail cannot be obtained, we will work with the PRE to determine if the needed information is likely to be available in sufficient time to be included

in the BDCP schedule. Descriptions of covered activities will include the purpose, location, and potential extent of disturbance that could be associated with the activity; actions that will be implemented to undertake the activity that could result in impacts on biological resources (i.e., impact mechanisms); and the anticipated implementation schedule and duration of the activity. Some covered activities may have large and detailed planning and engineering documents already prepared and available; such detailed information is not necessary for a covered activity description in the BDCP and in these instances the activity will be summarized to fit the appropriate level of detail for the BDCP. Once identified, SAIC will compile a GIS database of the projected location of covered activities and, as applicable, the area of disturbance associated with covered activities.

Operational Activities

SAIC will work with the PREs to develop a single description of the ongoing and future operational plans for the Delta. The regulatory environmental baseline that is established for the BDCP (see subtask 5.2) will be used to determine what parts of PREs' operational activities would require coverage under the BDCP.

Process for Accepting New PREs

At present there are ten PREs. However, it is anticipated that other PREs may wish to join the BDCP. In order to make that process as smooth as possible and to minimize any delays in the process, SAIC will work with the PREs and the Steering Committee to develop a process for amending the list of covered activities after it has been finalized, including how such late-arriving activities will be handled.

Covered Activities Reports

SAIC will prepare two draft and one final draft Description of Covered Activities report for review by the PREs and, as appropriate, the Steering Committee and Fishery Agencies.. The report will describe each PREs' fixed-location and operational covered activities. The review by the PREs and Steering Committee would be directed primarily towards ensuring that the descriptions of covered activities are complete, accurate, and within the scope of the BDCP. The review by the Fishery Agencies would be directed primarily towards ensuring that the covered activities are described in sufficient detail to meet each agency's needs for issuing permits under the federal and California laws and regulations. Text, tables, and graphics will be in a format suitable for incorporation into the BDCP as the covered activities chapter. SAIC will submit draft and final reports to the PPM as electronic files in Adobe PDF format via email or the SAIC FTP site.

Subtask 4.3 Interim Project Notification Process and Tracking

The Planning Agreement includes a process for notification of the Fishery Agencies when PREs proposed to undertake projects within the Planning Area prior to completion of the BDCP. SAIC will assist the PREs by developing a database for tracking these interim projects, including a summary of the project location, project purpose, biological effects, and mitigation measures included in the authorizations of those projects. This database will constitute a record of project and mitigation activity within the Planning Area during BDCP development and will be constructed to allow for the summation of affects on covered species and natural

communities from all approved interim projects. SAIC will construct and populate the database using Microsoft Excel software or other appropriate software. The database will be constructed for brevity, ease of data entry, and the summation of cumulative affects on species and natural communities.

Subtask 4.4 Meetings

Under this task, SAIC will attend up to 20 meetings with individual or groups of PRE's to review and revise the text describing the PREs specific covered activities.

Key Staff

Task Oversight: Paul Cylinder, Pete Rawlings
Task Lead: Craig Stevens
Senior Support: Loren Bottorff

Deliverables

- Draft Covered Activities List Memorandum (pdf file via email)
- Final Covered Activities List Memorandum (pdf file via email)
- Annotated outline of the Covered Activities Chapter (pdf file via email)
- First Draft Covered Activities Chapter (pdf file via email)
- Second Draft Covered Activities Chapter (pdf file via email)
- Final Draft Covered Activities Chapter (pdf file via email)
- Interim Project Database (MSExcel file via email)
- Notes from all meetings with PREs regarding covered activities (pdf file via email)

Assumptions

- All meetings with PREs will be held at PRE offices or SAIC offices in the Sacramento Area or the San Francisco Bay Area
- PRE staff will provide sufficient information to SAIC regarding the nature of their covered activities to develop the descriptions of covered activities for the BDCP.

Task 5. Ecological Baseline Data Compilation and Report

Subtask 5.1 Identify Covered Species

We will work with the PREs and Steering Committee to develop criteria for identifying a preliminary list of species to be covered and addressed in the BDCP. SAIC will prepare a draft and final technical memorandum describing covered species selection criteria and

recommended covered species. To develop this Work Plan, we have assumed that not more than 25 species could be covered under the BDCP.

Subtask 5.2 Determine Regulatory Environmental Baseline

Environmental baseline is defined by regulation under the Endangered Species Act. Before the impact analysis can be conducted or conservation measures developed, the time frame, actions, and conditions of the Planning Area that constitute the environmental baseline must be determined. SAIC will support the Fishery Agencies and Steering Committee in the process of determining the environmental baseline for the Planning Area. The concurrent Section 7 process for the OCAP must include a determination of the environmental baseline and that determination will affect the decision for environmental baseline for the BDCP. Once the regulatory environmental baseline is established, SAIC will be able to complete the description of ecological baseline conditions for the BDCP.

Subtask 5.3 Assemble Resource Data and Information and Identify Gaps and Uncertainties

SAIC will assemble data and information necessary for the development of the description of baseline ecological conditions, conduct of the impact analysis and development of the conservation strategy. All data and information will be from existing sources. No new data will be developed. We will work with the Fishery Agencies and the CALFED Science Program to identify and gather information on the species and natural communities covered by the BDCP. Other programs ongoing in the Planning Area such as the Delta Regional Ecosystem Restoration Implementation Plan (DRERIP) and Delta Risk Management Study (DRMS) will also be used as sources of baseline information on biological resources.

SAIC will work with the USBR, DWR, CBDA, USFWS, DFG, NOAA Fisheries, CALFED Science Program, and other agencies to gather existing data sets, including GIS data, that are useful in the development of the BDCP. Such information may include bathymetry, species distribution data, vegetation data, aquatic habitat data, facility locations, land use data, soils data, etc. SAIC will establish a project data library of existing databases for use in presenting baseline conditions, conducting the impact analysis, developing the conservation strategy, and creating graphical depictions for the BDCP document.

Once all sources of data and information have been investigated, SAIC will prepare a memorandum describing known or potential data gaps and the level of uncertainty associated with the available information. This memorandum will summarize information that would be valuable to the BDCP development, but that is not available from existing sources. The PREs and, as appropriate, the Steering Committee and Fishery Agencies will be asked to review the data gaps and determine if additional information should be collected. SAIC does not propose to fill data gaps under this scope of work.

Subtask 5.4 Prepare Ecological Baseline Report

SAIC will prepare a draft and final Ecological Baseline Report. This report will be formatted as the ecological baseline chapter of the BDCP. This report will describe the overall physical and biological features of the Planning Area, the ecological characteristics of covered natural communities, and the status and ecological requirements of covered species.

The ecological conditions chapter will provide an overview of the physical and hydrologic conditions that exist in the Planning Area under baseline environmental conditions. This task assumes that baseline Delta hydrologic conditions and operations will be described based on OCAP or related-program modeling provided by DWR and Reclamation. This description will include a description of the operation of major diversions and other facilities and graphics showing the locations of major diversions and other facilities and structures related to Delta operations in the Planning Area.

SAIC will prepare descriptions of the natural communities within the Planning Area. These descriptions will include an overview of distribution, dominant vegetation, common wildlife, and general ecological determinants (e.g., physical conditions such as soil types, geology, and hydrology that affect the community distribution and function).

The NCCP Act requires that NCCPs address the conservation of ecosystem functions, biological diversity, environmental gradients, and shifting species distributions. Although a decision has not been made for the BDCP to serve as an NCCP. SAIC will ensure that NCCP Act requirements are addressed such that a decision to make the BDCP an NCCP would not require reworking of the ecological baseline report. SAIC will identify and describe the following characteristics of the major natural communities in the Planning Area:

- Ecosystem Function. We will generally describe the ecological processes and functions typical of and important to each major community such as watersheds, biomass production, and flood flows.

- Biological Diversity. Working with the Fishery Agencies, SAIC will use available information, including CALFED Science Program data, to assess the biodiversity of different taxonomic groups within the Planning Area.

- Environmental Gradients. SAIC will us existing information to describe environmental gradients in the Planning Area, including regional gradients within the Delta such as salinity and temperature and transition zones and ecotones between the various natural communities in the Planning Area.

- Shifting Species Distributions. SAIC will use existing information to describe the potential for shifting species distributions due to environmental changes. We will consider the potential effects of climate change and sea level rise as assessed by recent DWR studies and the DRMS project.

SAIC will prepare status accounts for covered species using existing information gathered under subtask 5.3. Under this scope of work, it is assumed there will be no greater than 25 covered species included in the BDCP. Species accounts will contain the following information:

- Legal status
- Distribution
- Habitat requirements
- Known distribution in the Planning Area
- Population status and reason for decline
- Current threats to survival

- Existing management actions
- Recovery goals (if any)

Species accounts will focus on information that is directly pertinent to the assessment of impacts and development of conservation measures in the BDCP. For covered fish species, we will gather information that is available from extensive fishery surveys conducted by the California CDFG, DWR, USFWS, NOAA Fisheries, Reclamation, University of California, Davis (UCD), and a variety of other investigators. Information on the life-history requirements of covered fish is also available from the scientific literature as well as various observations and research investigations conducted within the Delta. Much of this information has been compiled and summarized through other projects including, but not limited to, CalFed, VAMP, DRMS, DRERIP, South and North Delta improvement projects, and a variety of other sources. In addition, information on many of the key species and habitats has been compiled and synthesized in the form of white papers such as those prepared for Central Valley salmonids, delta smelt, Sacramento splittail, and open water estuarine habitat.

SAIC will prepare up to two (2) drafts and a final draft Ecological Baseline Report for review.

Subtask 5.5 Meetings

To gather information and prepare the ecological baseline conditions report, SAIC will attend up to ten (10) meetings with the PREs and staff from various agencies including: Fishery Agencies, CALFED Science Program, CBDA, DWR, Reclamation, DRMS, and DRERIP.

Key Staff

Task Lead: Paul Cylinder, Pete Rawling
Aquatic Resources: Chuck Hanson
Riparian Resources: Jim Estep

Deliverables

- Data Gaps and Uncertainties Memorandum (via email to the PPM in Adobe PDF format)

- First Draft Ecological Baseline Report (via email in Adobe PDF format to the PPM)

- Second Draft Ecological Baseline Report (via email in Adobe PDF format to the PPM, 20 paper bound copies, 20 CDs)

- Final Ecological Baseline Report (via email in Adobe PDF format)

Assumptions

- All information and data gathered will be from existing, available sources and no new data will be collected under this scope of work.

- Fishery Agencies, PREs, and NGO's will work closely with SAIC and provide all available data and information necessary for the preparation of the BDCP.

- No more than 25 species will be covered under the BDCP

Task 6. Impact Assessment

Subtask 6.1 Develop Approach to Impact Assessment

Before initiating the impact assessment, SAIC will prepare a first draft and second draft Impact Assessment Approach Report describing the approach proposed for conducting the impact assessment on covered species and natural communities. SAIC will work with the PREs and Fishery Agencies to ensure that the proposed impact assessment approach will provide the information necessary to comply with the ESA and NCCPA. Impacts will be assessed from the baseline ecological conditions identified under Task 5. The report will identify the approach for each of the following components of the impact assessment:

- Impact mechanisms associated with each covered activity or groups of activities
- Impact mechanisms associated with anticipated proposed conservation measures (impact assessment methods would be developed iteratively following the preparation of the draft conservation strategy to address potential effects of conservation measures)
- Direct effects of covered activities and conservation measures on covered species
- Effects of covered activities and conservation measures on covered species habitats and natural communities
- Metrics for expressing level of take for covered species and impacts on natural communities
- Hydrologic and hydrodynamic modeling, conceptual species and species habitat models, population models, and other analytical tools proposed for use in assessing effects of covered activities and conservation measures on covered species and natural communities
- Statistical assessment methods

It is anticipate that impact mechanisms will be identified using conceptual models that have been developed through other programs (e.g., CALFED, DRERIP, DRMS, CALFED white papers,) and the analysis and synthesis of information available on species and habitat conditions.

SAIC will provide the first draft Impact Assessment Approach Report via email in Adobe PDF format to the PPM for distribution and review. Following review and comment on the first draft report, SAIC will prepare a second draft report. Following review and comment on the second draft report, SAIC will move forward with the impact analysis (subtask 6.2). The second draft Impact Assessment Approach Report and comments received from reviewers will serve as the basis for conducting the impact analysis.

Subtask 6.2 Conduct Impact Analysis

SAIC will conduct an assessment of impacts on covered species and natural communities that would be expected to result from implementation of the covered activities identified in Task 4. Following development of the conservation strategy under Task 7, SAIC will assess the impacts expected to result from the implementation of BDCP conservation measures. As the conservation strategy is revised and refined, this impact assessment for conservation measures will also require revision and refinement. The impact assessment will identify the likely direct, indirect, and cumulative impacts of the covered activities on covered species and natural communities and estimated levels of species take as defined under federal and California laws and regulations.

Conceptual Species Habitat Models

Conceptual species habitat models will be developed for covered species using constituent elements of habitat that can be identified and quantified using existing data on hydrology, water quality, vegetation, substrate, topography, bathymetry, and other parameters. SAIC will review existing conceptual models (e.g., models developed by DRERIP) to determine their applicability for use in the BDCP impact assessment. If appropriate, these existing conceptual models will be used directly or in modified form if necessary. As appropriate, models will be developed for species for which existing models are not available. The purpose of these models will be to assess impacts of covered activities and conservation measures on the extent and quality of species habitats. We will prepare a first draft Conceptual Species Habitat Model Report describing the proposed species models for review and a second draft report revised as needed to address comments received. The SAIC team will coordinate development of the species habitat models with the PREs and Fishery Agencies. The information provided in the report will be included in the Environmental Baseline chapter of the BDCP.

SAIC will provide the first and second draft Species Habitat Model Report via email in Adobe PDF format to the PPM for distribution and review.

Hydrologic and Hydrodynamic (H&H) Modeling

SAIC assumes that CALSIM II, RMA Bay-Delta, and DSM2 models will be the primary tools used to provide modeling outputs necessary for assessing the impacts of flow-related covered activities and conservation measures on covered species and natural communities. The SAIC H&H modeling team will work closely with the aquatic and riparian resources team to identify the scenarios to be modeled and the model outputs that will be required to assess impacts on covered fish and habitats for riparian-associated covered species. Modeling scenarios are expected to be iterative to provide information necessary as appropriate to modify flow-related covered activities to reduce levels of take and to increase the efficacy of conservation measures.

SAIC's modeling team will conduct a system-wide operations analysis to evaluate Delta flows and exports, operation and re-operation of the SWP and CVP water projects, and the extent of system-wide impacts on other water users and the environment with implementation of the conservation strategies. The current Central Valley water planning model used by Reclamation and DWR is CALSIM II, a general-purpose simulation model of the combined CVP/SWP systems as well as a host of smaller water supply entities with which the CVP/SWP systems

interact. The CALSIM II model requires assumptions related future hydrologic conditions, level of demands, regulatory environment, and operation of water project facilities. The results from CALSIM II will provide boundary conditions (i.e., flows and exports) to the Delta-specific models.

The assessment of impacts on covered fish species and aquatic conditions will require that the effects of the covered activities and other various actions on Delta flows, salinity, and water levels be evaluated. The modeling tools to be applied to analyze hydrodynamics and water quality in the Delta will be the RMA Bay-Delta and DWR DSM2 models.

Details of the modeling activities will be determined based on the needs of the aquatic and riparian impact assessment team, the nature of the alternative conservation strategies considered, and the proposed conservation strategy. The level of effort required to carry out the modeling activity will depend on the

- number of alternative simulations,
- time window of alternative analysis (days to weeks to years), and
- scale of structural changes to the Delta associated with each alternative (ranging from no change for evaluation of upstream flow management to significant change for large scale tidal marsh restoration or channel modifications.

While the RMA Bay-Delta model provides considerably more detailed information, the DWR DSM2 hydrodynamic and water quality model may be applied for longer-term planning analyses or for development of alternative conservation strategies. The export operations and other Delta boundary condition flows developed from CALSIM II model simulations or historic periods will provide the boundary conditions for DSM2 simulations. The DSM2 modeling will allow for a rigorous investigation of in-Delta flows, stage, and salinity conditions under modified hydrologic regimes or water project operations. In addition, current DSM2 modeling allows for incorporation of the proposed south Delta gates that are included in the South Delta Improvements Program. The DSM2 model can be simulated for the typical 16-yr planning period or for the full 82-yr simulation period of CALSIM II. Overall, DSM2 modeling will facilitate identification and quantification of Delta-wide impacts of the project as compared to baseline conditions.

To populate the models, the SAIC team will coordinate with the PREs and Fishery Agencies as appropriate to identify the assumptions to be used to model impacts of flow-related covered activities and conservation measures. SAIC will prepare up to 10 first draft and 10 second draft Modeling Assumption Reports describing the proposed model scenarios and model assumptions. The purpose of these reports is to provide for the review of the assumptions by the PREs and Fishery Agencies to ensure that the modeling assumptions are appropriate. The second draft reports will be revised based on revisions provided by reviewers to the first draft reports. Assumptions identified in the second draft report will be used to model the scenarios and will be incorporated into the BDCP appendix describing H&H modeling.

SAIC will provide draft and final Modeling Assumption Reports via email in Adobe PDF format to the PPM for distribution and review.

This task assumes that up to 15 model simulations will be required to assess impacts of the covered activities and conservation measures.

Impacts on Aquatic Resources

To conduct the analysis of impact s on aquatic resources, information from all relevant sources will be compiled and reviewed as part of the development of the technical foundation for the impact analysis and subsequent identification of conservation measures. These sources include:

- databases that characterize the seasonal and geographic distribution, trends in abundance, and associations between specific species and their habitats;

- outcomes of various experimental investigations, such as the juvenile Chinook salmon survival studies conducted on the Sacramento and San Joaquin River systems that will be analyzed to provide additional information on the relationship between survival or other population dynamic metrics and factors potentially affecting the biological response of these species to environmental conditions; information regarding SWP and CVP project operations, changes in hydrologic conditions in response to project operations, as well as historic information characterizing intra-annual and inter-annual variability in hydrology and habitat over a wide range of water year types;

- white papers that have been prepared for other efforts (e.g., CALFED), such as those prepared for Central Valley salmonids, delta smelt, Sacramento splittail, and open water estuarine habitat; and

- interviews with various scientific investigators who have been actively involved in analyzing various aspects of the Delta aquatic ecosystem, physical habitat conditions, and the effects of various environmental and other factors on habitat quality and availability for the species.

A wide variety of potential impact mechanisms affect the population dynamics of covered fish species inhabiting the Delta as well as habitat quality and availability for these species. Impact mechanisms associated with covered activities may include both direct and indirect effects on habitat conditions or effect the reproduction, growth, or survival of the covered species. Many of these impact mechanisms may change in the future in response to changing environmental conditions, such as sea level rise, warming, changes in hydrologic conditions, invasive species, etc., or act through cumulative and interdependent processes affecting the biological response of covered species to covered activities. The impact assessment for covered fish species will focus on two primary elements including (1) habitat-based assessment of the effects of covered activity and (2) species and life-stage specific analyses of the effects of covered activities on the population dynamics of each species. The impact assessment will include both quantitative/statistical analyses of existing data, when possible, and qualitative/interpretational analyses of general trends and patterns where the available data are insufficient to quantitatively assess a specific impact mechanism. Primary tools for evaluating impacts of flow-related activities will be application of the CALSIM II, the RMA water quality modeling, or the particle tracking model (see above). Results of this analysis will provide a technical basis for assessing the effects of existing covered activities on habitat quality and availability for various species and/or species dynamics, but will also form an important basis for evaluating the potential effectiveness of various alternative management actions

and conservation strategies in restoring and improving habitat functions, availability, and other processes that will protect covered species and contribute to their recovery (see Task 7).

Impacts on covered fish species will be expressed quantitatively (e.g., extent of habitat affected, quantity of individuals entrained) when supported by the available information or qualitatively for impacts that cannot be quantified based on the available information.

Impacts on Terrestrial Resources

We propose to use two approaches to conduct the assessment of impacts on terrestrial species:

1. Assessing impacts based on the location of known occupied covered species habitat relative to the projected area that could be affected by covered activities. This approach would apply to covered species for which occupied habitats in the Planning Area have been documented.

2. Assessing impacts based on application of species habitat models described above. This approach would apply to covered species for which the extent of occupied habitats are not well documented in the Planning Area, but for which their habitat requirements are known. Species habitat models would be developed based on the land cover types that support species habitat and species behaviors. Potential impacts would be identified by overlaying covered activity areas with habitat areas identified based on application of the models.

Impacts of non-flow-related activities and conservation measures that could result in a footprint impact on species habitats and natural communities would be determined by overlaying the projected footprints of the covered activities with the land cover type GIS data layer. Impacts of flow-related covered activities and conservation measures would be assessed based on H&H modeling results and would be expressed as expected changes in the extent or quality of habitats and natural communities. Impacts on habitats and natural communities and levels of take that cannot be easily quantified (e.g., changes in water quality, harassment of covered species associated with construction activities) will be described qualitatively.

Impact Assessment Reports

SAIC will prepare a first, second, and third draft Impact Assessment Report for review by the PREs and, as appropriate, the Steering Committee and Fishery Agencies. The first two drafts will focus only on impacts of the covered activities. Impacts of the covered activities will be used to guide development of the conservation measures that are proportional to the impacts. The third draft report will be used to prepare the impact assessment chapter of the BDCP. SAIC will also prepare up to four stand alone Impact Assessment Summaries in tabular or graphic format. The reports and summaries will be provided to the PPM via email in Adobe PDF format for distribution and review.

6.3 Support Indirect and Cumulative Effects Analysis

SAIC will support the PREs in development of the assessment of indirect affects as required under Section 7 of the Endangered Species Act. We assume that the PREs will provide text for

the indirect effects assessment. SAIC will review and provide comments on this draft text. SAIC will incorporate text received from the PREs on indirect affects into a section of the BDCP.

SAIC will work with the PREs to identify other non-federal projects for review of cumulative impacts as required under Section 7 of the Endangered Species Act. Using existing impact analyses of these other projects, SAIC will assess the cumulative affects on covered species. The cumulative impacts analysis will be prepared as a separate section of the BDCP.

Subtask 6.4 Meetings and Conference Calls

- Up to 25 meetings and 10 conference calls with the PREs and Fishery Agencies to develop and review the Impact Assessment Approach Report, develop and review the Species Habitat Model Report, develop and review Modeling Assumption Reports, and review Impact Assessment Reports

- 3 meetings with the Steering Committee to present and review the Impact Assessment Approach Report, Species Habitat Model Report, and Impact Assessment Report

Key Staff

Task Coordination and Oversight: Paul Cylinder, Pete Rawlings
H&H Modeling: John DeGeorge, Rob Tull, Armin Munevar
Biological Resources: Chuck Hanson, Jim Estep
Statistical Assessments: Bryan Manly

Deliverables

- First draft Impact Assessment Approach Report (via email to the PPM in Adobe PDF format)

- Second draft Impact Assessment Approach Report (via email to the PPM in Adobe PDF format)

- First draft Species Habitat Model Report (via email to the PPM in Adobe PDF format)

- Second draft Species Habitat Model Report (via email to the PPM in Adobe PDF format)

- Up to 10 draft Modeling Assumption Reports (via email to the PPM in Adobe PDF format)

- Up to 10 final Modeling Assumption Reports (via email to the PPM in Adobe PDF format)

- First draft Impact Assessment Reports (via email to the PPM in Adobe PDF format)

- Second draft Impact Assessment Reports (via email to the PPM in Adobe PDF format, up to 20 paper bound copies and 20 CDs of one draft selected by the PPM)

- Third draft Impact Assessment Reports (via email to the PPM in Adobe PDF format)
- Four (4) Impact Assessment Summaries (via email to the PPM in Adobe PDF format)

Assumptions

- Habitat models will be prepared for up to 25 species
- PREs, Fishery Agencies, and Reclamation will provide comments to review documents to the PPM in accordance with the schedule
- Each reviewing entity will coordinate internal comments and will not submit conflicting comments to the PPM
- The impact assessment will be conducted using the best available information and the BDCP schedule will not be modified pending completion of relevant ongoing studies
- Biological Goals and Objectives Report, Conservation Measures Report, Adaptive Management Plan, and Monitoring and Research Plan

Task 7. Conservation Strategy

Subtask 7.1. Review and Describe Other Conservation Programs in the Planning Area

SAIC will compile and review information related to conservation and other actions being undertaken through other programs within the Planning Area. Information developed under this task will be used to support development of the BDCP conservation strategy, such as the identification of opportunities to improve the efficacy of BDCP conservation measures through coordination with other programs.

To implement this task, we anticipate meeting with CBDA CALFED program planners, DRERIP, DRMS, Delta Planning Commission, DWR, Fishery Agencies, and others as appropriate to identify their ongoing and planned activities relevant to development of the BDCP. We will prepare a draft and final Other Delta Programs Report presenting the information collected under this task and provide them via email in Adobe PDF format to the PPM for distribution and review.

Subtask 7.2 Prepare Proposed Conservation Strategy

SAIC will prepare a detailed description of the proposed conservation strategy that will serve as the draft conservation strategy chapter for the BDCP. The proposed conservation strategy will describe measurable goals and objectives for each of the covered species and natural communities and will be consistent with guidance provided under the USFWS's Five-Point Policy for HCPs and the requirements of the NCCP Act. Key elements of the conservation strategy are the biological goals and objectives, conservation measures, monitoring plan, and adaptive management plan. Draft deliverables for each of these elements will be combined under Task 9 to prepare the conservation strategy chapter of the draft BDCP.

Overall Conservation Goals and Approachs

SAIC will work with the Steering Committee work groups through two (2) workshops to develop the overall conservation goals and approach to the conservation strategy. The first workshop would include a discussion of overall conservation goals for and potential approaches to the conservation strategy and would conclude with direction to SAIC on overall goals to achieve and range of approaches to conservation to develop. The second workshop would include a presentation by SAIC in which we present several potential overall approaches to the conservation strategy, directed at meeting the overall conservation goals; a discussion of the pros and cons of each conservation strategy approach; and direction to SAIC a to what approach the conservation strategy should take. Following receipt of direction on the overall approach to the conservation strategy, SAIC would begin development of the proposed conservation strategy as detailed below.

Biological Goals and Objectives

The SAIC team will develop specific biological goals and objectives for each of the covered species and natural communities. Species and community specific goals and objectives will be consistent with the overall conservation goals and objectives identified for the selected proposed conservation strategy. Goals and objectives will be formulated based on information collected under baseline ecological report and results of the impact assessment.

We will develop a first draft Biological Goals and Objective Report for review, a second draft based on comments received on the first draft, and will provide a third draft report based on comments received. The reports will be provided to the PPM via email in Adobe PDF format for distribution and review.

Development of Conservation Measures

SAIC will develop conservation measures designed to avoid and minimize impacts, mitigate impacts to the maximum extent practicable, and to achieve conservation goals for covered species and natural communities. Conservation measures will be developed to meet the regulatory standards for section 10 of the ESA and NCCPA, or CESA if the BDCP does not serve as an NCCP. To develop avoidance and minimization measures, we will work with the PREs to identify opportunities to modify covered activities to reduce adverse effects while achieving the objectives of the activities.

To support development of the BDCP conservation measures, SAIC will review existing documents (e.g., CALFED Ecosystem Restoration Plan, CALFED MSCS, DRERIP, biological opinions) to identify the range of existing conservation measures that have been implemented or that have been proposed for conserving covered species and natural communities. We will evaluate the success of measures that have been implemented to determine their suitability for achieving the BDCP biological goals and objectives. SAIC will evaluate the available body of information to identify conservation measures that will achieve the biological goals and objectives. For example, we propose to evaluate portions of the Delta where the greatest effects of ongoing flow-related activities are located to determine if there are cost-effective opportunities to modify or relocate the facilities to reduce take. We will also look at opportunities outside of the

Delta to restore spawning and rearing habitats or remove stressors that could increase the recruitment of fish and offset the effects of covered activities.

As appropriate, SAIC will evaluate the likely effectiveness of proposed conservation measures for achieving biological objectives using hydrologic modeling simulations, conceptual models, and other information. This task assumes that several exploratory simulations will be initially required to iterate between the biological, hydrologic, hydrodynamic, water quality, and policy aspects associated with potential conservation measures. The SAIC H&H modeling team will perform up to ten (10) model simulations for this purpose. As the suite of flow-related conservation measures are finalized, model simulations will be required to evaluate impacts on the water supply operations, Delta water levels, and water quality. This task assumes that up to three (3) model simulations will be conducted to provide this information. Depending on the complexity of the conservation measures, several trial simulations may be required before arriving at final simulations to support impact assessments. Up to fifteen (15) 1-year simulations using the RMA Bay-Delta model will be conducted for applicable conservation measures to assess hydrodynamic and salinity transport, residence time analysis for selected locations, simulate short-term particle tracking. As the suite of flow-related conservation measures are finalized, we assume that up to three model simulations will be conducted over a 15 year simulation window to assess impacts.

Conservation measures will be developed for each of the covered natural communities. These community-level conservation measures will address ecosystem functions necessary to sustain each natural community and will also provide for the protection, enhancement, and restoration of habitats for the covered species associated with each of the communities. Community-level conservation measures will include provisions for management actions that may need to be periodically implemented to maintain desired vegetative structure and compositions that provide habitat for covered species.

The conservation strategy will identify species-specific conservation measures for those covered species for which their conservation needs cannot be wholly achieved through implementation of system-wide-level and natural community-level measures. Examples of species-specific measures would include measures that would be implemented in conjunction with covered activities that would avoid and minimize direct effects on covered species, that provide for protecting specified habitat areas necessary for one or more covered species, and establishing populations.

SAIC will develop a first draft Conservation Measures Report for review, a second draft based on comments received on the first draft for review, and will prepare a third draft report based on comments received. The reports will be provided to the PPM via email or SAIC FTP site in Adobe PDF format for distribution and review.

Adaptive Management Plan

The adaptive management plan (AMP) will be designed to meet the guidance provided in the USFWS's Five-Point Policy for HCPs and the requirements of the NCCP Act. The adaptive management plan will address processes and procedures for adjusting BDCP implementation based on new information learned through results of effectiveness monitoring and research conducted under the BDCP and by others (e.g., CALFED research and monitoring) over the term of the BDCP. To develop these processes, we will review adaptive management processes adopted for

other plans and will work with the PREs and Fishery Agencies to identify a process that will meet the regulatory objectives of the BDCP. An important focus of the AMP will be development of a flexible process that can to the extent practicable accommodate future changes in Delta conditions (e.g., Delta operations, sea level rise). We will also work with the PREs and Fishery Agencies to identify changed circumstances, in compliance with USFWS/NOAA Fisheries "no-surprises" regulations, and remedial measures that would be implemented in the event of those changed circumstances. We will also identify procedures for addressing unforeseen circumstances.

SAIC will develop a first draft AMP for review, a second draft based on comments received on the first draft for review, and will provide a third draft report based on comments received. The reports will be provided to the PPM via email or SAIC FTP site in Adobe PDF format for distribution and review.

Monitoring and Research Plan

The monitoring and research plan will identify monitoring goals and objectives, performance standards, the range of research that may be undertaken under the BDCP, and reporting requirements. This Work Plan assumes that detailed monitoring protocols and schedules and specific research studies will be developed during BDCP implementation. To develop the monitoring and research plan, SAIC will review the extent of existing and planned monitoring and research relevant to the BDCP being implemented through other programs. We will use this information to focus the BDCP monitoring and research plan to address only monitoring and research needs that are not provided for under these other programs. The plan may include effects monitoring, implementation monitoring, and effectiveness monitoring. Effects monitoring would only be identified for covered activities for which there are uncertainties about the extent of likely impacts and mitigation needs. The need for effects monitoring would be determined based on the results of the impact analysis. Implementation monitoring would describe the monitoring to be undertaken to document the implementation of conservation measures and compliance with terms and conditions of the permits. Effectiveness monitoring would describe the monitoring that may be undertaken to determine the response of covered species populations, species specific habitat, and natural communities to implementation of conservation measures. Effectiveness monitoring would be directed towards providing the information necessary to adaptively implement the strategy over the term of the BDCP.

SAIC will develop a first draft Monitoring and Research Plan for review, a second draft based on comments received on the first draft for review, and will provide a third draft plan based on comments received. The draft plans will be provided to the PPM via email in Adobe PDF format for distribution.

Subtask 7.5 Meetings and Conference Calls

- Up to 20 meetings with the PREs and other Steering Committee work groups as appropriate to develop goals and prepare the conservation strategy
- Up to 8 meetings with planning staff from other Delta programs to identify conservation and other activities relevant to developing the conservation strategy

- Up to 6 meetings with the Steering Committee to present and review the Biological Goals and Objectives Report, Conservation Measures Report, Adaptive Management Plan, and Monitoring and Research Plan

Key Staff

Task Coordination and Oversight: Paul Cylinder, Pete Rawlings
Biological Resources: Chuck Hanson, Jim Estep
Coordination with Other Programs: Craig Stevens

Deliverables

- Draft Other Delta Programs Report (via email in Adobe PDF format to the PPM)
- Final Other Delta Programs Report (via email in Adobe PDF format to the PPM)
- first draft Biological Goals and Objective Report (via email in Adobe PDF format to the PPM)
- second draft Biological Goals and Objective Report (via email in Adobe PDF format to the PPM)
- third draft Biological Goals and Objective Report (via email in Adobe PDF format to the PPM)
- first draft Conservation Measures Report (via email in Adobe PDF format to the PPM)
- second draft Conservation Measures Report (via email in Adobe PDF format to the PPM)
- third draft Conservation Measures Report (via email in Adobe PDF format to the PPM)
- first draft Adaptive Management Plan (via email in Adobe PDF format to the PPM)
- second draft Adaptive Management Plan (via email in Adobe PDF format to the PPM)
- third draft Adaptive Management Plan (via email in Adobe PDF format to the PPM)
- first draft Monitoring and Research Plan (via email in Adobe PDF format to the PPM)
- second draft Monitoring and Research Plan (via email in Adobe PDF format to the PPM)
- third draft Monitoring and Research Plan (via email in Adobe PDF format to the PPM)

Assumptions

- PREs, Fishery Agencies, and Reclamation will provide comments on review documents to the PPM in accordance with the schedule

- Each reviewing entity will coordinate internal comments and will not submit conflicting comments to the PPM

- Conservation measures will be developed based on the best available information and the BDCP schedule will not be modified pending completion of relevant ongoing studies

Task 8. Economic Analysis

Subtask 8.1 Prepare Implementation Relative Cost Estimates for Alternative Conservation Strategies

To support the workshops and the development of the overall approach to conservation strategy as described in subtask 7.2, the SAIC economics team will develop screening-level cost/benefit information for up to three alternative conservation strategies. The economics team will use appropriate tools (such as Metropolitan Water District's Action-Effectiveness Comparison [AEC] Tool, if approved) to represent expected relative implementation costs and conservation benefits of each alternative. Conservation benefits will be represented in terms of the expected increase in fish populations or other metrics to gage progress towards achievement of goals and objectives over BDCP implementation. Strategy costs will be defined in terms of the annualized life-cycle cash flow requirements of the conservation measures comprising each alternative strategy. The ratio of expected population gain per dollar of investment will be the primary metric for ranking the alternatives in terms of cost-effectiveness.

Model Documentation

Before initiating the cost/benefit screening analysis of alternatives, the economics team will prepare a brief describing the modeling approach, model structure, data requirements, key model assumptions, calibration, and necessary updating for use in the screening analysis.

Subtask 8.2 Prepare Implementation Cost Estimate for Proposed Conservation Strategy

Once the proposed conservation strategy has been selected and described the SAIC economics team will develop detailed implementation cost estimates for the proposed strategy. Whereas the cost estimating for alternative overall conservation strategies under subtask 8.1 will rely on reconnaissance-level cost information, the objective of this task is to develop a level of cost detail capable of supporting the BDCP's implementation cost allocation and funding plans.

Cost Estimation Guidelines

Before developing costs for conservation measures, the SAIC economics team will prepare guidelines for the cost estimation, including formatting, level of detail, discounting assumptions, and period of analysis. The economics team will use these guidelines to assure consistency in approach across team members and conservation actions. Existing state and federal guidelines for cost estimation will be reviewed and incorporated into the team guidelines as necessary. A first draft of the guidelines will be circulated to the PREs and Fish Agencies for review and comment. Following the comment period, the final guidelines will be prepared.

Review Existing Cost Estimates

The economics team will conduct a review of previous cost estimates for conservation measures included in the proposed conservation strategy. This review will identify the set of conservation measures for which existing detailed cost information is available. We will then assess the quality and applicability of this cost information for use in the BDCP. Conservation measures in the proposed conservation strategy will be sorted into three categories: (1) measures with no existing usable cost information; (2) measures with limited existing cost information of varying quality; and (3) measures with good existing cost information of medium to high quality. Using this information, the economics team will identify for each conservation measure the remaining cost information it must develop.

Develop Cost Estimates for Conservation Measures

The economics team will work with engineers, habitat restoration specialists, and other experts to develop missing cost information for each conservation measure. Costing the conservation measures is expected to require engineering and biological expertise that will be drawn from other members of the SAIC team, PREs, and the Fishery Agencies. It is important to emphasize that the economics team views costing as a collaborative exercise, which is expected to require extensive cooperation and participation by the PREs and Fishery Agencies.

Prepare the Cost Estimate for the Proposed Conservation Strategy

The economics team will develop a set of linked spreadsheets or databases to manage the conservation measures cost information. This data tool will allow costs to be summarized by type of action (e.g. fish screens), cost category (e.g. land acquisitions, construction, operations and maintenance [O&M]), year of occurrence, or other parameter (e.g. geographic occurrence). The economics team anticipates the proposed conservation strategy will evolve as BDCP development progresses through reviews and revisions. The costing tool therefore will be constructed so as to facilitate rapid cost updating in response to changes in the level or timing of conservation measures. Before developing new tools, the economics team will evaluate the suitability and adaptability to this task of the AES Tool used in subtask 8.1. The economics team will select whichever approach (i.e. new tool development or adaptation of AES Tool) it deems most cost-effective.

Subtask 8.3 Assist with Conservation Funding Strategy

The work in this subtask is predicated on the assumption that the PREs and the Steering Committee will take the lead on developing the conservation funding and cost allocation strategy. The role of the SAIC economics team will be to provide analytic and technical support, as requested by the PREs and the Steering Committee.

Existing Funding. The SAIC economics team will compile information on existing state and federal funding that may be available to support BDCP implementation, such as passage of recent bond propositions (e.g. Proposition 84 that passed in November 2006); state and federal agency budgets (e.g. ESA Section 6 grants), state general fund revenues, federal appropriations, and water project revenue sources (e.g. CVPIA restoration funds). The economics team will work with the PREs and Fishery Agencies to construct an initial list of existing funding sources

to research. The economics team will develop a brief summarizing the amount of existing funding by source, limitations on the use of this funding for BDCP implementation, the period in which the funding is potentially available, the agency controlling the funding source, and other pertinent information.

Financing Tools. The economics team will list and describe potential financing tools or mechanisms that could be used by the BDCP. These can include (but are not limited to): annual, one-time, or periodic contributions by PREs (potentially financed by annual revenues, local bonds, or other borrowing), state general and revenue bond financing, federal appropriations, and in-kind contributions.

BDCP Cost/Revenue Schedule. Using information from subtask 8.2, the economics team will develop a schedule of all costs to be incurred over the implementation period for the BDCP. Anticipated revenues from all sources also will be scheduled. The cost/revenue schedule will allow comparison of the timing of expenditures and receipts, and calculation of borrowing costs (or interest earnings on undisbursed funds). Mismatches in expenditures and revenues can be used to revise the implementation schedule and/or the revenue requirements. The level of funding obligation detail will depend on the preferences of the PREs and Fish Agencies, as well as the state of funding negotiations. For example, the initial schedule may only show aggregate obligations for PREs, the state of California, and the federal government. The next iteration may disaggregate PRE obligations into more detailed groupings (e.g. SWP, CVP, other PRE). The final schedule will reflect the specifics of the negotiated funding strategy.

The economics team will extend the BDCP costing tool developed in subtask 8.2 to provide the cost/revenue scheduling capability described above.

Subtask 8.4 Meetings and Conference Calls

- Up to 5 meetings and 5 conference calls with PREs to review, update, and implement the relative implementation costs and conservation benefits tool
- 1 meeting with the Steering Committee to present and review the Strategy Alternatives Action-Effectiveness Rankings
- Up to 10 meetings and 10 conference calls with PREs and Fishery Agencies to review cost estimation guidelines, review existing cost information and estimates, develop unit cost estimates of conservation actions, and review the BDCP Costing Tool
- 2 meetings with the Steering Committee to present and review cost estimates for the proposed BDCP strategy
- Up to 5 meetings and 5 conference calls with PREs and Fishery Agencies to review existing funding for BDCP implementation, financing tools and funding entity options.
- 3 meetings with the Steering Committee to present and review the BDCP Funding Plan.

Key Staff

Integration with BDCP: Paul Cylinder, Pete Rawlings

Task Coordination & Oversight: David Mitchell
Economics Team: Jim Watson, Steve Hatchett, Wendy Illingworth, Duane Paul

Deliverables

All Task 8 Technical Memoranda delivered via email to the PPM in Adobe PDF format. Final versions of all Task 8 models delivered to the PPM at the end of the project.

- Technical Memorandum: Screening Model Documentation (Draft and Final)
- Technical Memorandum: Model Updating Procedure and Outcomes (Draft and Final)
- Technical Memorandum: Alternative Screening Cost-Effectiveness Rankings (Draft and Final)
- Model: BDCP Alternatives Screening Model
- Technical Memorandum: Cost Estimation Guidelines (Draft and Final)
- Technical Memorandum: Cost Estimates Review (Draft and Final)
- Technical Memorandum: BDCP Conservation Action Unit Cost Estimates (Draft and Final)
- Model: BDCP Proposed Strategy Costing Model
- Technical Memorandum: Existing Funding Sources (Draft and Final)
- Technical Memorandum: Financing Tools and BDCP Funding Entity Options (Draft and Final)
- Model: BDCP Proposed Strategy Cost/Revenue Scheduler

Assumptions

- Cost/Benefit screening in subtask 8.1 will be done for up to three (3) alternative strategies.
- Costing detail will be commensurate with the level of detail in which conservation actions are specified. General or vaguely defined actions will have correspondingly general estimates of costs.

Task 9. Draft Bay-Delta Conservation Plan

Under this task, the SAIC Team will prepare administrative draft and public review draft versions of the BDCP.

Subtask 9.1 Prepare Administrative Draft Bay-Delta Conservation Plan

Following completion of the proposed conservation strategy and cost and funding analyses, SAIC will complete the full BDCP document including all components required of a joint NCCP/HCP document and biological assessment (BA). The draft BDCP will include:

- Description of purpose and need
- Geographic scope of plan, duration of plan, covered species
- Description of the covered activities
- Ecological baseline conditions
- Analysis of impacts
- Analysis of indirect and cumulative effects
- Proposed conservation strategy
- Expected outcomes with implementation of conservation measures
- Monitoring and adaptive management plan
- Governance and implementation Structure
- Implementation plan
- Implementation cost and funding sources
- Regulatory assurances requested by applicants
- Alternatives to take considered and rejected

The PREs and Steering Committee will provide SAIC with a description of the governance and implementation structure and a description of the BDCP implementation funding assurances and sources.

SAIC will initially prepare a first draft annotated outline describing each BDCP chapter and its contents for review. Based on comments received, we will prepare a second draft outline that will be used to guide preparation of the Administrative Draft BDCP. The draft annotated outlines will be provided via email to the PPM in Adobe PDF format for distribution to reviewers.

The SAIC Team will prepare up to four (4) administrative drafts of the BDCP for review. Each draft will be revised to address comments received to the previous draft. We will post the draft documents on the SAIC FTP site in Adobe PDF format. Comments received to the fourth draft will be used to prepare the public draft BDCP under Subtask 9.2.

Subtask 9.2 Prepare Public Review Draft Bay-Delta Conservation Plan

Based on comments received on the fourth administrative draft BDCP, SAIC will prepare the public review draft BDCP. This subtask assumes that the public review draft BDCP and draft IA will be released concurrently for review with the public review draft EIR/EIS and that the paper bound and CD copies of the public review draft documents will be assembled, reproduced, and distributed by the EIR/EIS consultant. SAIC will initially prepare a screen-check version of the public review draft BDCP for review. Revisions required to the screen-check public review draft are assumed to be minimal, primarily editorial, and without large changes or changes in substantive content. The screen-check public review draft will be provided to the PPM for distribution via the SAIC FTP site in Adobe PDF format. Based on comments received, SAIC will prepare the public review draft BDCP and will provide the

EIR/EIS consultant with the electronic files for reproduction and public distribution. We will also post the public review draft BDCP on the SAIC FTP site in Adobe PDF format.

Subtask 9.3 Support of Draft EIR/EIS Preparation

SAIC will support the consultant charged with preparation of the EIR/EIS. Under this task, we will coordinate with the EIR/EIS consultant to ensure their understanding of the BDCP covered activities and conservation measures and to address questions that may arise regarding the intent of the BDCP. We will also coordinate the scheduling and transfer of the public review draft BDCP to the EIR/EIS consultant for public release of the BDCP documents.

Subtask 9.4. Support Draft Implementing Agreement

This work plan assumes that SAIC will not prepare the Draft Implementing Agreement (IA). Under this task, SAIC will provide the PREs with technical support in preparation of the Draft IA.

Subtask 9.5 Meetings

- Up to 15 meetings and five (5) conference calls with the PREs, Steering Committee, and Fishery Agencies
- Up to two (2) meetings and (2) conference calls with the PREs and Fishery Agencies to coordinate preparation and distribution of the public review draft BDCP documents
- Up to five (5) meetings and (5) conference calls with the EIS/EIR Consultant team and BDCP EIR/EIS manager to support preparation of the draft EIS/EIR and assembly of the public review draft BDCP documents
- Up to three (3) meetings and two (2) conference calls to provide technical support to the preparation of the draft IA

Key Staff

Task Coordination and Oversight: Paul Cylinder, Pete Rawlings
Economics Chapter and Appendices: David Mitchell

Deliverables

- first draft annotated outline (via email to the PPM in Adobe PDF format)
- second draft annotated outline (via email to the PPM in Adobe PDF format)
- first administrative draft BDCP (posted on the SAIC FTP site in Adobe PDF format)
- second administrative draft BDCP (posted on the SAIC FTP site in Adobe PDF format)
- third administrative draft BDCP (posted on the SAIC FTP site in Adobe PDF format)
- fourth administrative draft BDCP (posted on the SAIC FTP site in Adobe PDF format)

- screen-check public review draft BDCP (posted on the SAIC FTP site in Adobe PDF format)

- public review draft BDCP (electronic files of the BDCP provided to the EIR/EIS consultant and posted on the SAIC FTP site in Adobe PDF format)

Assumptions

- the PPM will distribute all draft BDCP documents for administrative and public review

- the PREs will develop and provide SAIC with a description of the implementing entity, funding mechanisms, and funding sources for incorporation into the BDCP document

- the CEQA/NEPA lead agencies and the EIR/EIS consultant will be responsible preparation of the EIR/EIS on the BDCP

- the PREs will prepare and provide SAIC with the draft IA in electronic format for inclusion as an appendix to the public draft BDCP

Task 10. Final Bay-Delta Conservation Plan

Under this task, the SAIC Team will prepare the final BDCP.

Subtask 10.1 Review and Respond to Public Comments

SAIC will work with the PREs, Fishery Agencies, and the EIR/EIS consultant to review and respond to public comments specifically on the public review draft BDCP received by the federal and state lead agencies. This task assumes that the EIR/EIS consultant will assemble and categorize comments, identify and provide comments to be addressed by SAIC, and will provide SAIC with the format for responding to comments and the Response to Comments document. We will coordinate with the EIR/EIS consultant to ensure that responses to comments prepared by SAIC are consistent with those prepared by the EIR/EIS consultant. This task assumes that SAIC will prepare responses for up to 200 dissimilar comments. We will prepare up to three drafts of each response based on comments received from reviewers to each previous draft. The draft responses will be provided to the PPM via email for transmittal to reviewers and the EIR/EIS consultant.

Subtask 10.2 Prepare Final Bay-Delta Conservation Plan

Based on responses to comments approved by the PREs under Subtask 10.1, we will prepare a draft final BDCP for review. We will provide an Adobe PDF file of the draft final BDCP to the PPM for distribution to reviewers. . Following receipt of comments, we will prepare a screen-check final BDCP for review . Revisions required to the screen-check final BDCP are assumed to be minimal, primarily editorial, and without change in substantive content. The screen-check final BDCP will be provided to the PPM for distribution to reviewers on the SAIC FTP site in Adobe PDF format. Based on comments received, we prepare the final BDCP and will provide the EIR/EIS consultant with the electronic files for the EIR/EIS consultant to compile, reproduce, and distribute.

Subtask 10.3 Support Final EIS/EIR Preparation

SAIC will support the consultant charged with preparation of the final EIR/EIS. Under this task, we will coordinate with the EIR/EIS consultant to resolve any inconsistencies between the draft final versions of the BDCP and EIR/EIS. We will also coordinate the scheduling and transfer of the public review draft BDCP to the EIR/EIS consultant for public release of the final BDCP document.

Subtask 10.4. Support Final Implementing Agreement

Under this task, SAIC will provide the PREs with technical support in preparation of the final IA. SAIC will review draft final IA text and provide comments via email.

Subtask 10.5 Meetings

- Up to five (5) meetings and five (5) conference calls with the PREs, Steering Committee, Fishery Agencies, and EIR/EIS Consultant to prepare responses to comments on the public review draft BDCP
- One (1) meeting and (2) conference calls with the PREs, Fishery Agencies, and EIR/EIS Consultant to coordinate preparation and distribution of the final BDCP
- One (1) meeting and two (2) conference calls to provide technical support to the preparation of the final IA

Key Staff

Task Coordination and Oversight: Paul Cylinder, Pete Rawlings

Deliverables

- first draft responses to comments on the BDCP public review draft (via email to the PPM)
- second draft responses to comments on the BDCP public review draft (via email to the PPM)
- third draft responses to comments on the BDCP public review draft (via email to the PPM)
- draft final BDCP (posted on the SAIC FTP site in Adobe PDF format)
- screen-check final BDCP (posted on the SAIC FTP site in Adobe PDF format)

Assumptions

- the CEQA/NEPA lead agencies and the EIR/EIS consultant will be responsible for assembling and responding to comments and for preparation and distribution of the final EIR/EIS

- the CEQA/NEPA lead agencies and the EIR/EIS consultant will be responsible for production and distribution of the final BDCP document in conjunction with production and distribution of the final EIR/EIS.

- The Steering Committee will be responsible for preparation of the final IA

3.0 GENERAL SCOPE ASSUMPTIONS

In addition to assumptions described for each scope task, for all tasks described in the above scope of work SAIC makes the following general assumptions:

- SAIC has assumed that the Planning Area encompasses the Statutory Delta (covered activities and conservation measures) and tributaries of the Delta up to the major dams, Suisun Marsh, and Suisun Bay (conservation measures only). All tasks described in this Work Plan are based on this assumption. Adoption of a Planning Area that encompasses additional area would require modification of the scope and costs of the Work Plan.
- Comments provided by the Steering Committee, PREs and all participating entities will be consolidated and conflicting comments resolved before submittal to SAIC. Comments from all participating entities will be provided to SAIC by the Steering Committee and PREs within 2 weeks of receipt (i.e., receipt by PPM from SAIC) of draft documents.

- For each deliverable listed that includes a review, there will be only a single comment cycle and any additional revisions would be considered to be for the subsequent deliverable (if there is a subsequent deliverable in the scope of the task). In the event of several comment cycles, a contract revision will be requested to increase funding for the additional scope.

- All deliverables will be provided by SAIC to the PPM and the PPM will be responsible for distribution to appropriate reviewers.

- SAIC is not responsible for the accuracy or completeness of data and information provided to SAIC by the various federal and state agencies or other parties that is used on any aspect of this project.

- Meeting agendas and summaries will not be handled SAIC; these tasks will be handled by specific committee chairs or the public involvement and outreach consultant.

4.0 SCHEDULE

[Note: Schedule to be provided after scope of work is reviewed and revised]